PROGRESS REPORT COVERING THE

PERIOD 1 APRIL, 1973 TO 31 MAY, 1973

PLANNING APPLICATIONS IN EAST CENTRAL FLORIDA

PROPOSAL NO. Y-10-066-001

BREVARD COUNTY PLANNING DEPARTMENT

TITUSVILLE, FLORIDA

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PROPOSAL NO. Y-10-066-001

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DIGITAL ANALYSIS

A HISTOGRAM PROGRAM IS UNDER DEVELOPMENT AND CURRENTLY IS IN USABLE BUT UNFINISHED FORM. THIS PROGRAM PRINTS HISTOGRAMS FOR A SELECTED REGION AND BAND, SHOWING THE FREQUENCIES OF OCCURRENCE OF THE DIFFERENT SENSOR COUNTS. THE OUPUT OF THIS PROGRAM IS USED TO DETERMINE THE INITIAL DIVISION OF COUNTS FOR THE DENSITY-SLICED MAPPING. FURTHER MODIFICATIONS OF THE DENSITY SLICING ARE THEN MADE BY TRIAL-AND-ERROR BASED ON EXPERIENCE AND COMPARISON WITH THE IMAGE.

CHARACTERISTICS OF CITIES

TITUSVILLE

USEFUL RESULTS CAN BE OBTAINED BY USING THE HISTOGRAM AND DENSITY-SLICED MAPPING PROGRAMS AS OUTLINED ABOVE. THEIR USE TO PRESENT A MAPPING OF TITUSVILLE IS SHOWN BY FIGURE 1. FOR COMPARISON PURPOSES, THE TRACING OF A MAGNIFIED BAND 5 IMAGE IS RE-PRESENTED (FIGURE 2). IT CAN BE SEEN THAT THE COMPUTER MAP SHOWS THE FEATURES OF THE TRACING. IT IS FOUND, FURTHER, THAT THE COMPUTER MAP BRINGS OUT OTHER VARIATIONS WHICH ARE LESS APPARENT IN VISUAL OBSERVATION OF THE IMAGE.

A TRACING OF A MAGNIFIED 1969 RB-57 PHOTOGRAPH OF TITUSVILLE IS SHOWN AS FIGURE 3.

DETAILED COMPARISON OF THE PHOTOGRAPH WITH THE COMPUTER PRINTOUT HAS BEEN OBTAINED BY USING A BAUSCH AND LOMB ZOOM TRANSFER SCOPE TO PROJECT THE PHOTOGRAPH ONTO THE PRINTOUT AND THEN TRACE THE OUTLINES OF THE DISTINCT SECTORS IN THE PHOTOGRAPH ONTO THE PRINTOUT. THE RESULT IS SHOWN

FIGURE 1

SYMBOL	RADIANCE (MW/CM^2-SR)
BLANK	0 - .10
.	.10 - .12
/	.12 - .13
>	.14 - .16
*	.16 - .20
H	.20 - .25
R	.25 - .30
B	.31

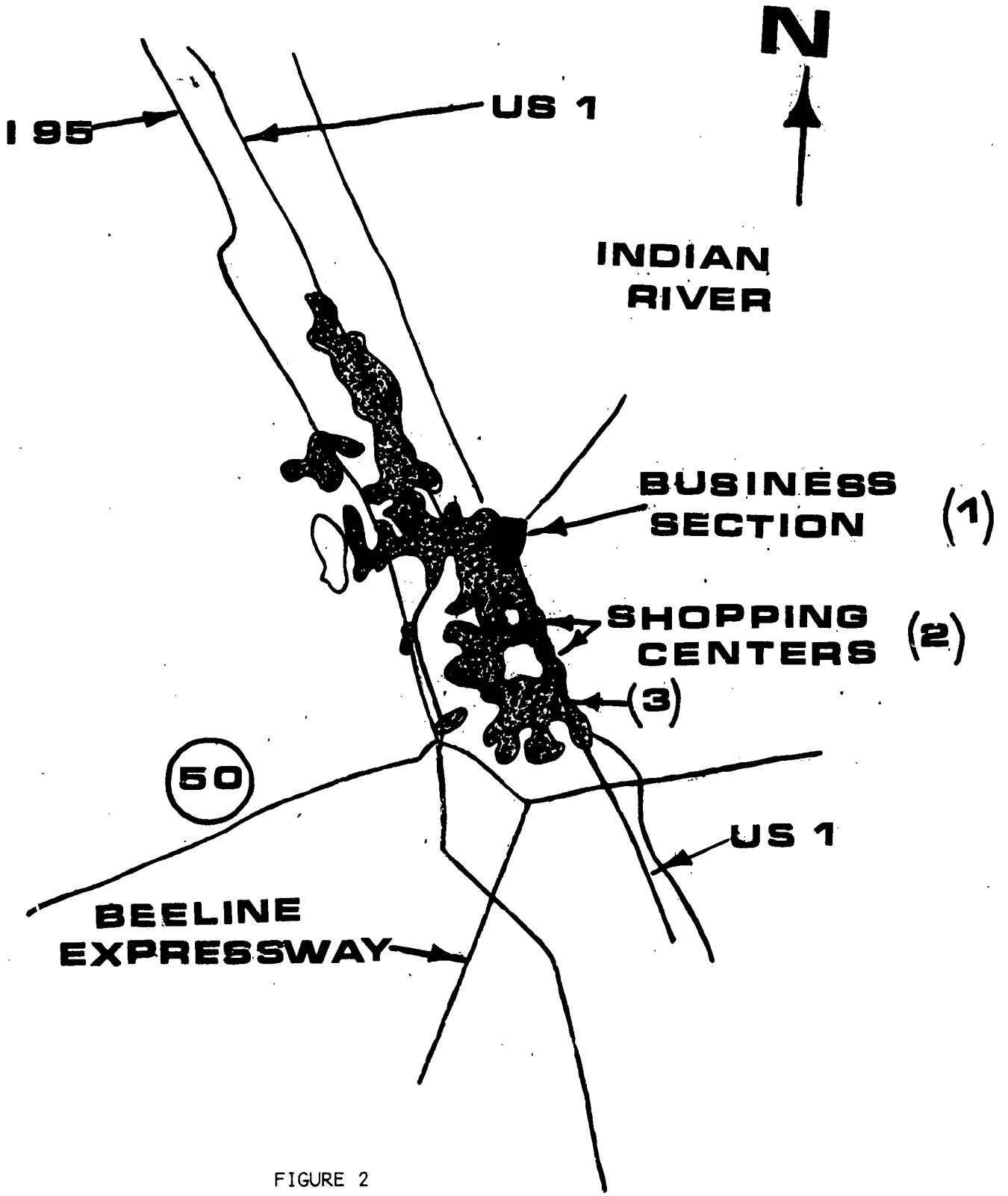

FIGURE 2

TITUSVILLE

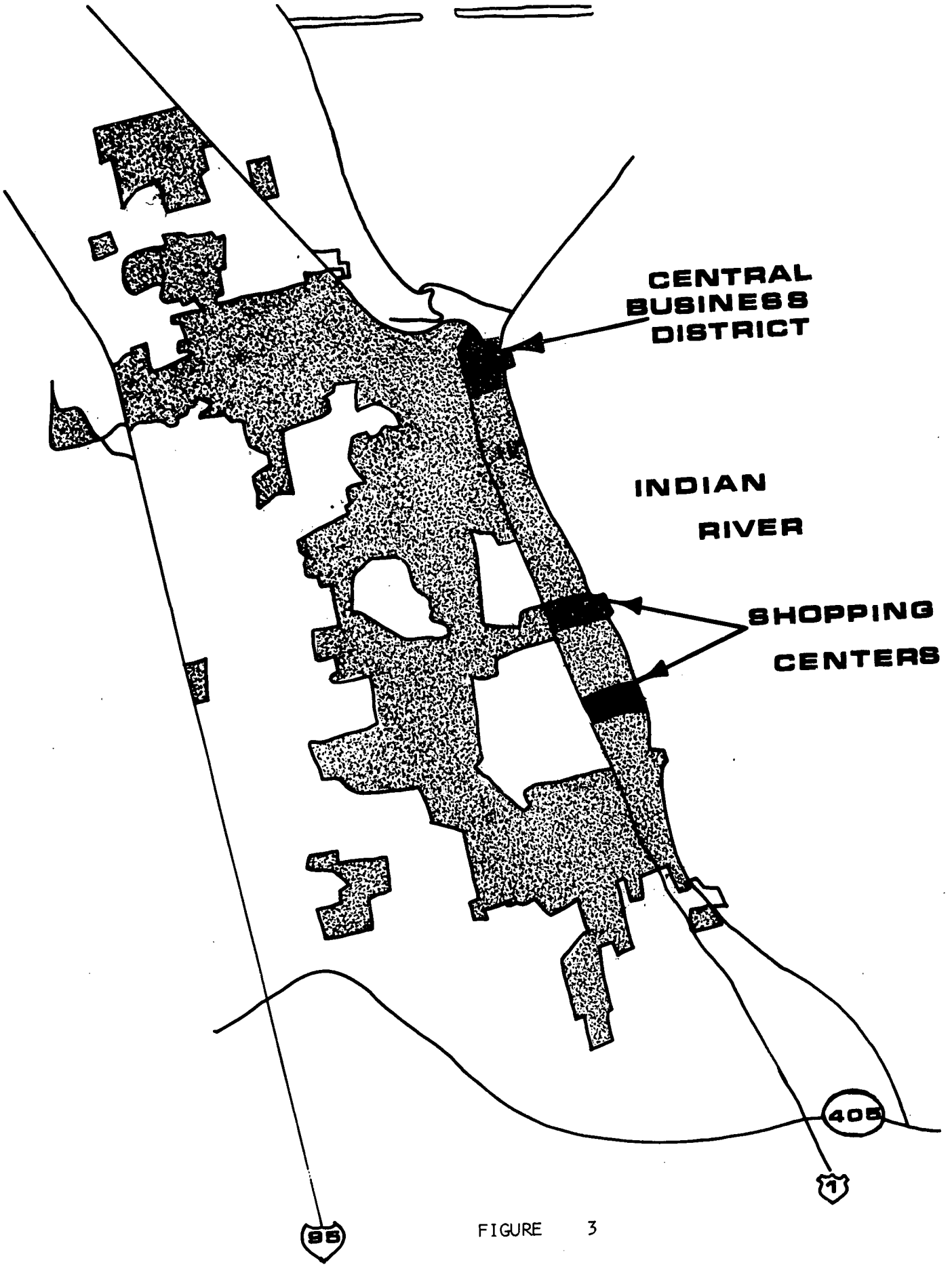

FIGURE 3

TITUSVILLE OCT. '69

IN FIGURE 4. THIS COPY OF THE PRINTOUT, UNLIKE THE OTHERS IN THIS REPORT, IS POSITIVE WITH RESPECT TO THE DATA IN THAT REGIONS OF HIGHER RADIANCE ARE SHOWN AS LIGHTER IN COLOR. FEATURES ADDED SINCE 1969, AS INDICATED BY THEIR PRESENCE IN THE PRINTOUT BUT NOT IN THE PHOTOGRAPHY, ARE SHOWN BY DASHED BOUNDARY LINES AND CROSS-HATCHING.

BY CAREFUL CHOICE OF POSITIONS AND WIDTHS OF THE DENSITY SLICES, APPRECIABLY MORE INFORMATION CAN BE OBTAINED THAN IS SHOWN BY FIGURE 1. THE DENSITY-SLICING PARAMETERS WHICH HAVE BEEN FOUND TO BE THE MOST INFORMATIVE WITH REGARD TO THE PATTERN OF THE DEVELOPED AREA AND TO INTERNAL FEATURES OF THE CITY HAVE BEEN USED FOR FIGURE 5. STUDY OF THAT PRINTOUT SHOWS THAT IT CONTAINS APPRECIABLY MORE INFORMATION ABOUT THE INTERNAL FEATURES OF THE CITY THAN HAD BEEN ANTICIPATED. IT IS CLEAR, FOR EXAMPLE, THAT THE GENERAL PATTERN OF HIGH INTENSITY DEVELOPMENT WITHIN THE CENTRAL BUSINESS DISTRICT IS SIMILAR TO THAT SHOWN BY THE CONVENTIONAL LAND USE MAP OF THE CITY. TO CHECK THIS POINT FURTHER, A WALKING SURVEY OF THE CENTRAL BUSINESS DISTRICT (AND ADJACENT GARDEN STREET) WAS MADE -- WITHOUT FURTHER REFERENCE TO THE PRINTOUT -- AND SHADING WAS DONE ON A CITY STREET MAP, BLOCK-BY-BLOCK, TO INDICATE REGIONS OF ANTICIPATED HIGH REFLECTANCE (MOSTLY HIGH INTENSITY DEVELOPMENT BUT ALSO INCLUDING VACANT LOTS WITH BARE SAND VISIBLE). THE RESULT OF THIS WALKING SURVEY IS SHOWN IN FIGURE 6, WHICH MAY BE COMPARED TO THE CORRESPONDING SECTOR OF FIGURE 5. THIS RESULT HAS BEEN PURSUED FURTHER BY USING THE ZOOM TRANSFER SCOPE TO PROJECT FIGURE 6 ON THE PRINTOUT AND TRACING THE PATTERN, THE RESULTS OF WHICH ARE SHOWN IN FIGURE 7. POSITIONAL DISCREPANCIES ARE TO BE

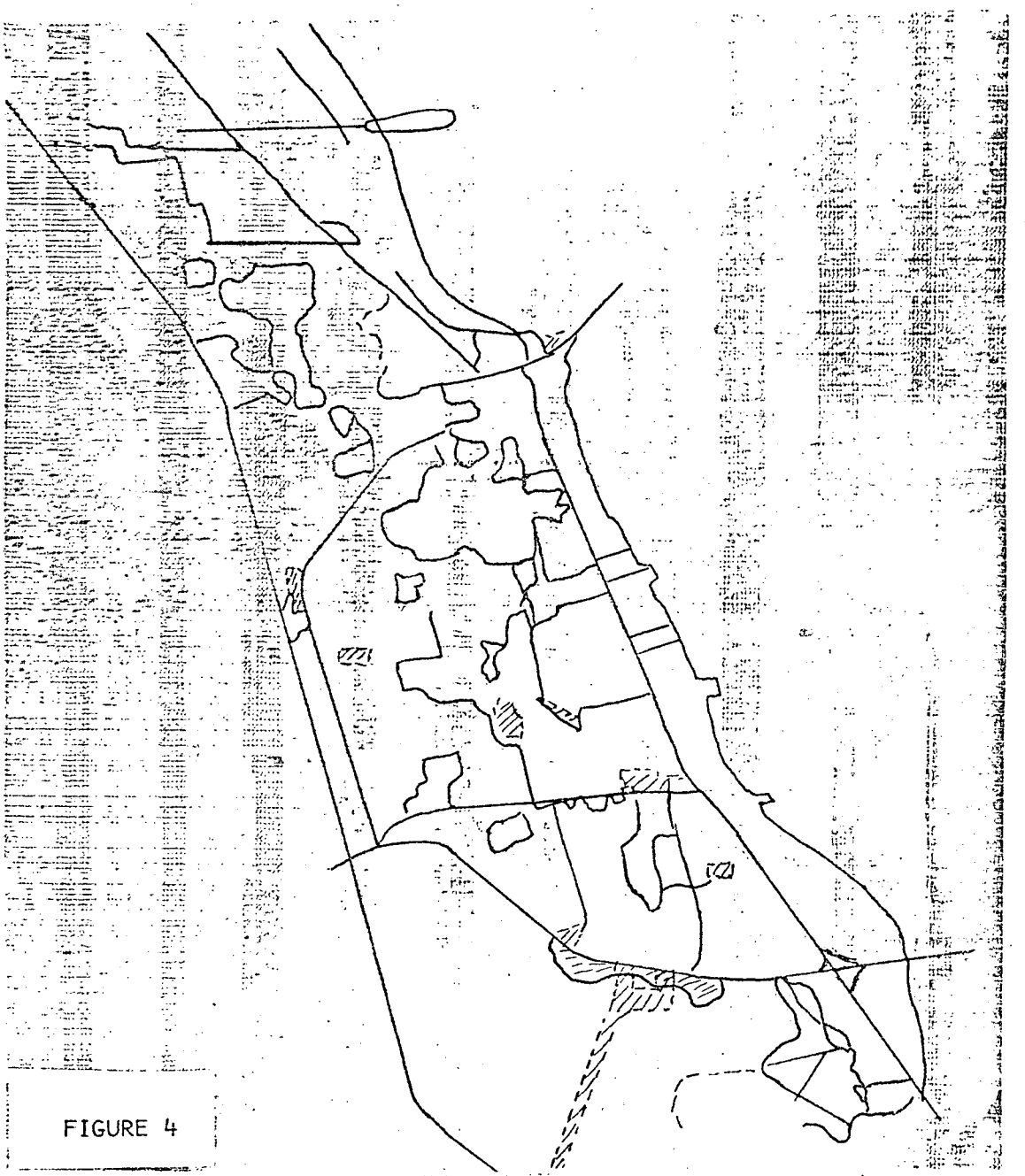

FIGURE 4

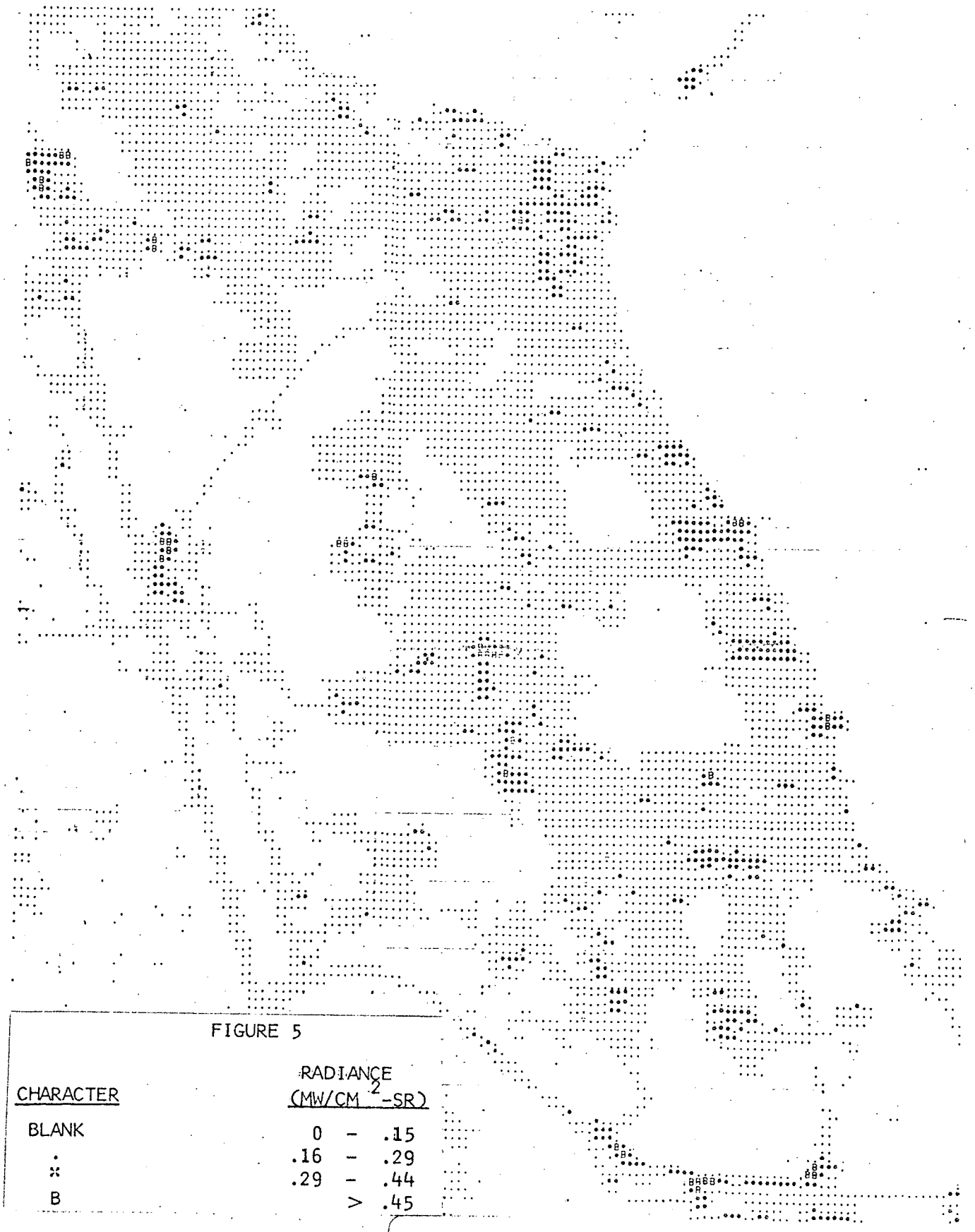

FIGURE 5

CHARACTER	RADIANCE (MW/CM^2-SR)
BLANK	0 – .15
.	.16 – .29
*	.29 – .44
B	> .45

FIGURE 6

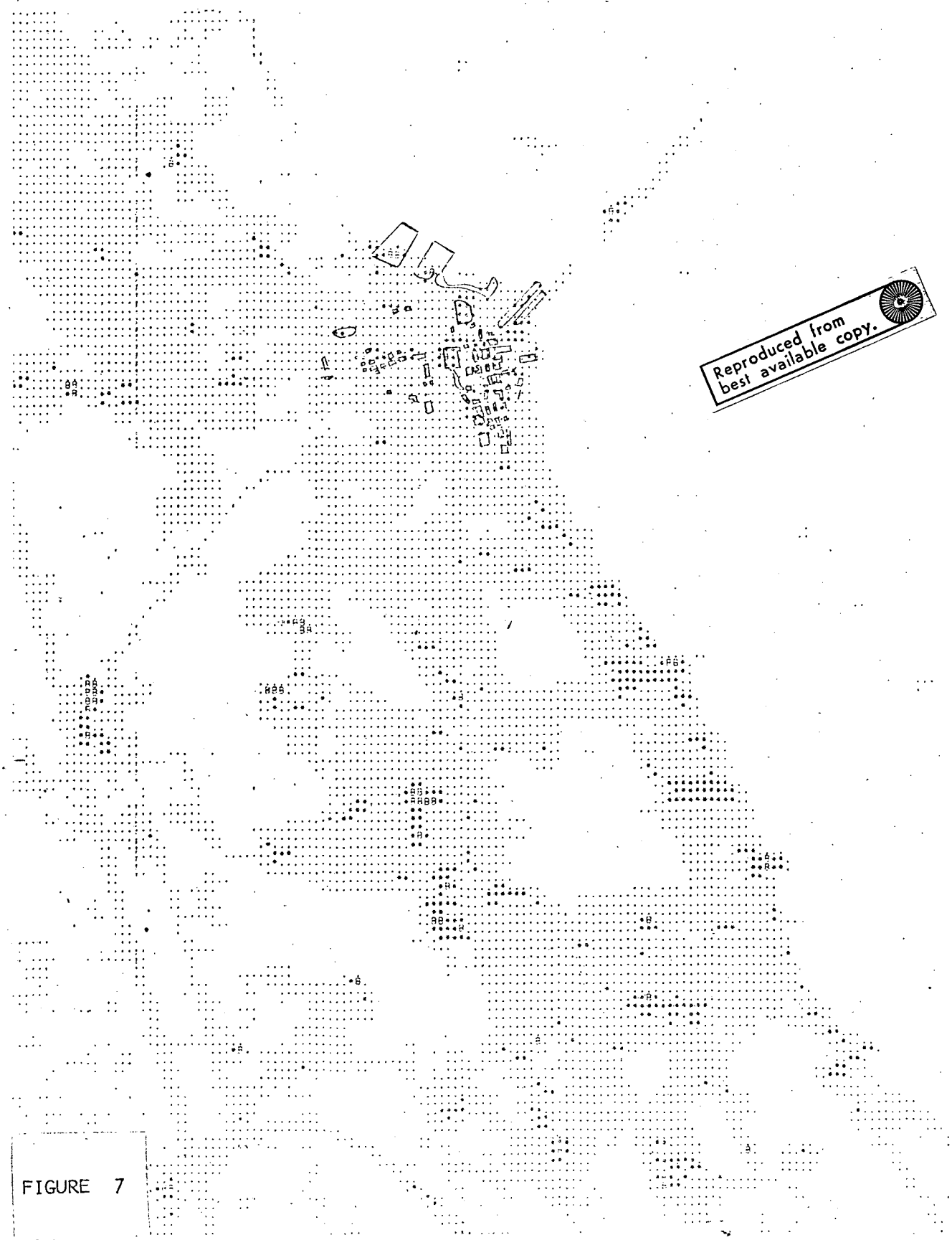

FIGURE 7

EXPECTED, AS NEITHER THE STREET MAP WHICH SERVED AS THE BASIS FOR FIGURE 6 NOR THE COMPUTER PRINTOUT POSSESSES CARTOGRAPHIC PRECISION.

THE PRINTOUT CALLS ATTENTION TO A SOMEWHAT UNIQUE FEATURE OF DOWNTOWN TITUSVILLE WHICH IS BORNE OUT BY THE WALKING SURVEY, NAMELY, THAT THE CENTRAL BUSINESS DISTRICT DOES NOT HAVE UNIFORM INTENSITY OF DEVELOPMENT. RATHER IT HAS RETAINED SOME OF THE CHARACTERISTICS OF A COUNTRY TOWN IN THAT THE COMMERCIAL AREAS HAVE NON-COMMERCIAL, RESIDENTIAL TYPE USES INTERPOSED, WITH SOME TREES AND OTHER VEGETATION. THIS SUGGESTS THAT WITH JUDICIOUS MODERNIZATION, DOWNTOWN TITUSVILLE HAS THE POTENTIAL TO BECOME AN AESTHETICALLY PLEASANT DOWNTOWN AREA.

THE PRINTOUT ALSO SHOWS CLEARLY THREE SIZEABLE PRIVATELY-OWNED UNDEVELOPED AREAS IN TITUSVILLE, ANOTHER SOMEWHAT UNIQUE FEATURE WHICH IS OF CURRENT VALUE AND POTENTIAL LONG-RANGE VALUE TO THE CITY.

AN ATTEMPT WAS MADE TO IDENTIFY, BY GROUND OBSERVATION, EACH OF THE "BRIGHT" SPOTS (RADIANCE $\geq$ .29MW/CM ^{2}-SR). A PRINTOUT WITH THE LOCATIONS NUMBERED IS SHOWN AS FIGURE 8, AND THE CORRESPONDING "GROUND TRUTH" IS LISTED IN TABLE 1. OF THE 113 "BRIGHT SPOTS", ONLY 8 (7%) HAVE NOT BEEN IDENTIFIED. BY COUNTING CHARACTERS ASSOCIATED WITH EACH "BRIGHT SPOT", A TABULATION OF THE NUMBER OF CHARACTERS AND CORRESPONDING AREA ASSOCIATED WITH THE VARIOUS LAND USE CATEGORIES WAS MADE AND IS GIVEN AS TABLE 2.

THE UTILITY TO A PLANNER OF TIMELY AVAILABILITY OF SOME OF THE INFORMATION IN TABLE 2, AND CHANGES THEREIN, IS EVIDENT. DUE TO THE RESOLUTION AND THE INTEGRATING NATURE OF THE SENSOR, THE AREA VALUES ARE, OF COURSE, IMPRECISE. THEY SHOULD, HOWEVER, BE USEFUL FOR COMPARISON WITH SIMILAR DATA TAKEN AT ANOTHER TIME.

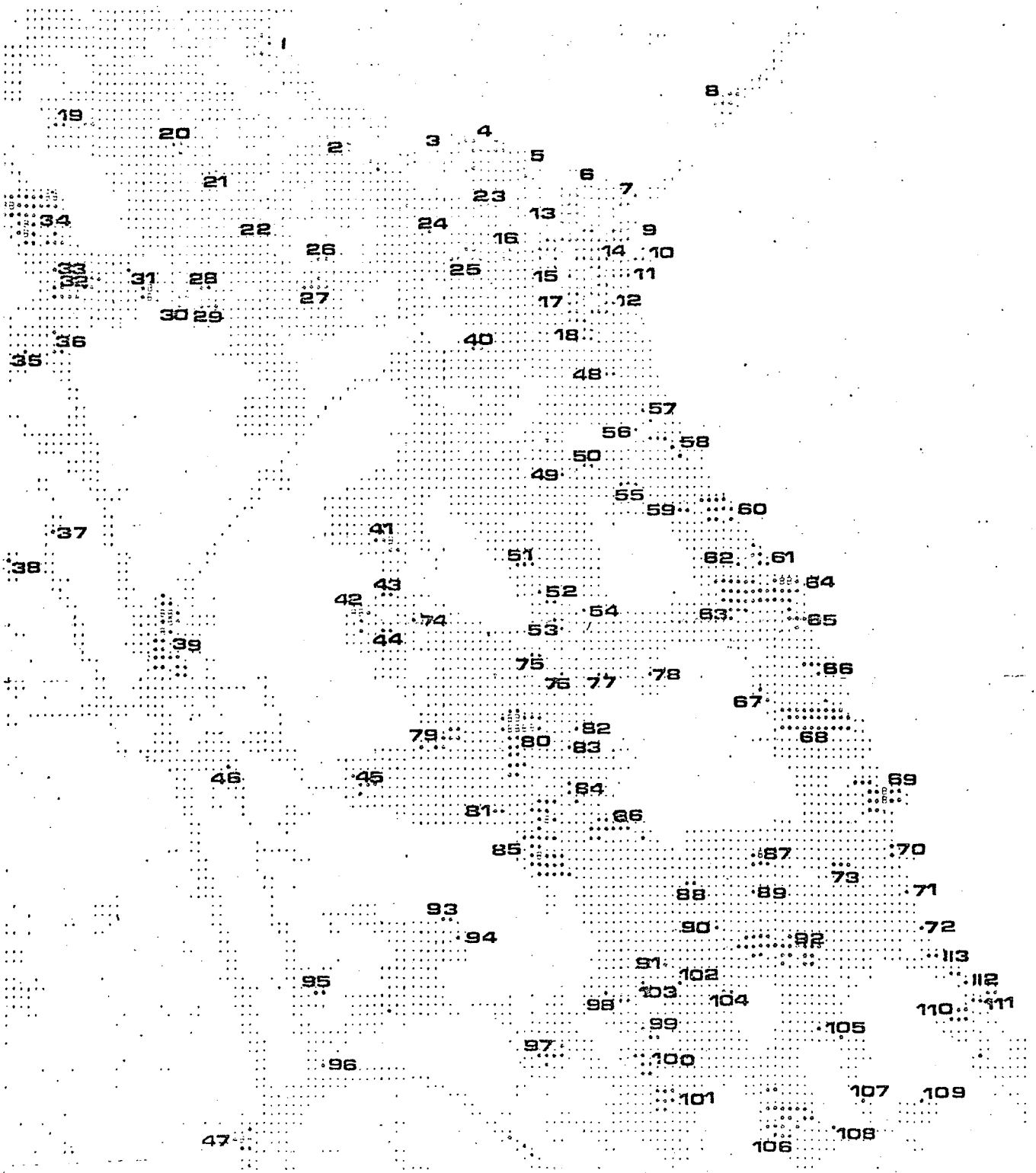

FIGURE 8

TABLE 1

LOCATION NUMBER	IDENTIFICATION
1	CHURCH, COMMERCIAL
2	INDUSTRIAL, HOSPITAL
3	INDUSTRIAL
4	INDUSTRIAL
5	PARKING LOT (SAND), BASEBALL FIELDS
6	INDUSTRIAL
7	PARKING LOT (SAND), BASEBALL FIELDS
8	PARKING LOT (SAND), BOAT LAUNCHING RAMPS
9	VACANT LOTS (SEMI-BARE SAND)
10, 11, 12 13, 14	COMMERCIAL
15	INDUSTRIAL
16	COMMERCIAL
17	COUNTY COURTHOUSE
18	COMMERCIAL
19	2 SCHOOLS
20	VACANT LOTS (UNCERTAIN)
21	INDUSTRIAL (COUNTY MAINTENANCE FACILITY)
22	AIRPORT HANGER AND PARKING STRIP
23	COMMERCIAL
24	FOOTBALL STADIUM, PARKING LOT
25	COMMERCIAL

TABLE 1 (CONT'D)

LOCATION NUMBER	IDENTIFICATION
26	CONSTRUCTION AREA
27	COMMERCIAL
28	INDUSTRIAL (CITY WATER FACILITY)
29, 30	COMMERCIAL
31	BARE SAND (MOTORBIKES)
32	BARE SOIL, COMMERCIAL
33	UNIDENTIFIED
34	NEWLY CONSTRUCTED HIGH SCHOOL (B'S REPRESENT NEW ASPHALT DRIVING COURSE, NEW ASPHALT PARKING LOT, BARE SOIL)
35	SCHOOL
36, 37	BARE SAND
38	UNIDENTIFIED
39	RESIDENTIAL DEVELOPMENT; B'S REPRESENT BARE SAND (MOTOR-BIKES, DUNE BUGGIES)
40	SHOPPING CENTER
41	BARE SAND (MOTORBIKES)
42	LOTS WITH BARE SAND (MOTORBIKES, DUNE BUGGIES)
43	CONSTRUCTION
44	CHURCH WITH PARKING LOT
45	RESIDENTIAL SECTION WITH SEVERAL SEMI-BARE LOTS

TABLE 1 (CONT'D)

LOCATION NUMBER	IDENTIFICATION
46	INDUSTRIAL
47	CONSTRUCTION
48	COMMERCIAL
49	APARTMENTS
50, 51, 52	SEMI-BARE LOTS
53	COMMERCIAL, BARE SAND (TOPSOIL REMOVED)
54	BARE SAND
55	INDUSTRIAL (SCHOOL BOARD MAINTENANCE FACILITY)
56, 57, 58	COMMERCIAL
59	HIGH SCHOOL
60, 61	COMMERCIAL
62	UNIDENTIFIED
63	COMMERCIAL
64	POST OFFICE, PARKING LOT (B'S REPRESENT PARKING LOT)
65	APARTMENT BUILDING
66, 67, 68	COMMERCIAL
69	APARTMENT BUILDING (B'S REPRESENT LARGE, SEMI-BARE SAND PARKING LOT)
70, 71, 72	COMMERCIAL
73	INDUSTRIAL
74	UNIDENTIFIED
75	CONSTRUCTION

TABLE 1 (CONT'D)

LOCATION NUMBER	IDENTIFICATION
76	ROAD CONSTRUCTION
77	NEW RESIDENTIAL CONSTRUCTION
78	SCHOOL
79	APARTMENTS, BARE LOT
80	NEW RESIDENTIAL CONSTRUCTION
81	APARTMENTS
82	UNIDENTIFIED
83	NEW RESIDENTIAL CONSTRUCTION
84	CONSTRUCTION
85	APARTMENTS, NEW RESIDENTIAL AREA WITH SOME BARE LOTS
86	BARE SAND, (MOTORBIKES) TOPSOIL REMOVED
87	BARE SAND (MOTORBIKES)
88	BASEBALL FIELD
89	UNIDENTIFIED
90	CHURCH
91	COMMERCIAL; SEMI-BARE LOT
92	COMMERCIAL
93	RESIDENTIAL CONSTRUCTION
94	BARE SAND (MOTORBIKES)
95	DRIVE-IN THEATER
96	BARE SOIL
97	BARE SAND (MOTORBIKES)
98	COMMERCIAL, APARTMENTS
99, 100, 101	BARE SAND (MOTORBIKES, DUNE BUGGIES)

TABLE 1 (CONT'D)

LOCATION NUMBER	IDENTIFICATION
102	CHURCH
103	COMMERCIAL
104	COMMERCIAL (ROLLER SKATING RINK, PARKING LOT)
105	UNIDENTIFIED
106	BARE LOTS IN NEW RESIDENTIAL DEVELOPMENT (SOME MOTORBIKE TRACKS)
107	BARE SAND, TOPSOIL REMOVED (MOTORBIKES)
108	BARE SAND (MOTORBIKES)
109	BARE SECTION OF LITTLE LEAGUE BASEBALL PARK
110	INDUSTRIAL
111, 112, 113	COMMERCIAL

TABLE 2

LAND USE CATEGORY	NUMBER OF CHARACTERS	AREA
PUBLIC	34	15 HA.
COMMERCIAL	221	96
INDUSTRIAL	38	16
RECREATIONAL (INCLUDING ASSOCIATED PARKING LOTS)	18	8
VACANT LOTS (WITH SPARSE VEGETATION OR LESS)	106	46
CONSTRUCTION	34	15
NEWLY CONSTRUCTED BUILDINGS AND FACILITIES	42	18
RESIDENTIAL AREAS WITH RELATIVELY SPARSE VEGETATION	56	24
APARTMENT BUILDINGS (INCLUDING PARKING LOTS)	40	17

BY COUNTING THE TOTAL NUMBER OF DOTS AND BLANK SPACES WITHIN THE AREA OF TITUSVILLE, IT IS POSSIBLE TO ASSIGN A FRACTION OF THE TOTAL AREA TO EACH OF THE IDENTIFIED LAND USE CATEGORIES. THIS HAS NOT BEEN DONE IN THIS CASE, HOWEVER, BECAUSE IT CAN BE DONE MORE EASILY AFTER OUR HISTOGRAM PROGRAM IS COMPLETED, AS THAT PROGRAM WILL TABULATE THE FREQUENCY OF OCCURRENCE OF EACH PRINTOUT CHARACTER IN A DESIGNATED SECTOR. NOT SO EVIDENT FROM THE TABULATIONS BUT EVIDENT TO THE "GROUND TRUTH" OBSERVER, IS THE SURPRISING NUMBER OF REGIONS OF BARE SAND. IN MOST OF THE CASES WHERE A SECTOR WAS COMPLETELY OR ALMOST BARREN, THERE WERE TRACKS WHICH HAD BEEN MADE BY MOTORBIKES AND SOMETIMES, DUNE BUGGIES. TEN SUCH SECTORS WERE NOTED IN TITUSVILLE, CORRESPONDING TO AN AREA OF APPROXIMATELY 20 HA. IT IS CLEAR THAT THERE IS NO CHANCE OF VEGETATION GROWING IN THE SOFT SAND STIRRED UP BY MOTORBIKES IN SUCH SECTORS. IN A FEW CASES, THE ENVIRONMENTAL DEGRADATION HAD BEEN EXPEDITED BY PRIOR REMOVAL OF TOP SOIL. DIRECT OBSERVATION OF THESE MOTORBIKE REGIONS AND CONSIDERATION OF THEIR TOTAL NUMBER AND AREA LEADS TO THE CONCLUSION THAT MOTORBIKES AND DUNE BUGGIES ARE IN THIS WAY DOING SIGNIFICANT ENVIRONMENTAL DAMAGE.